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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/710,340	11/09/2000	Jeremy Francis Taylor	0987/62100/JRW/ADM	5056

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EXAMINER

SPIEGLER, ALEXANDER H

ART UNIT	PAPER NUMBER
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1637

DATE MAILED: 01/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/710,340

Applicant(s)

TAYLOR ET AL.

Examiner

Alexander H. Spiegler

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 September 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13,21 and 23 is/are allowed.
- 6) ☒ Claim(s) 1-12,14-20 and 22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

### **DETAILED ACTION**

1. This action is in response to Paper No. 6, filed on September 19, 2002. Currently, claims 1-23 are pending. This action contains new rejections, which were not necessitated by amendment, and therefore, this action is made NON-FINAL.

#### ***Withdrawal of Previous Rejections***

2. In view of Applicants amendments and arguments, the 112, 2<sup>nd</sup>, 102 and 103 rejections of the previous office action have been withdrawn.

#### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-11, 14-18, 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gallo et al. (Genetica (1997) 110: 1-12).

Assignment of an individual to a group or population of origin through the genotyping of said individual is a well-known technique that has been used for several years in the art. One of the many applications of genotyping and subsequent assignment of an individual to a particular group or population of origin is in the field of forensic science (pgs. 1-2). Given the broadest reasonable interpretation of the claimed invention, forensic detection of criminal suspects reads on the claims as broadly written.

Specifically, when a crime occurs, law enforcement personnel obtain possible suspects. That is, they identify a set of candidate populations of origin, wherein each candidate population is characterized by genotype frequencies and allele frequencies at one or more marker loci (humans inherently have genotype frequencies and allele frequencies at one or more marker loci) (step (a)). Simultaneous to step (a) (i.e., identifying human beings), law enforcement personnel are also only selecting individuals who they believe may have committed the crime by using knowledge of the individual, such as, the whereabouts of the individuals at the time of the crime, or a description of the individual, such as, height, hair color, skin color, etc. (step (b)). Following step (b), law enforcement personnel will genotype the suspect (step c), as well as, DNA type the profiles of samples collected at the crime scene (see abstract). Once the two samples are analyzed, law enforcement will determine whether a match between the suspect's DNA profile and that found at the crime scene (see abstract) (steps d-g).

In other words, law enforcement determines a prior genotype probability by using knowledge about a subject (steps a-b), then genotypes the subject (step c), matches the genotype to samples taken at the crimes scene, giving a genotype probability (step d), and combining steps (b) and (d) to form a population posterior genotype probability (step e). Finally, law

enforcement personnel would identify a most likely individual to the population, based on the largest population posterior genotype (step f) (i.e., an individual who may fit the description of someone who was around the crime scene at the time of the crime, as well as, someone's DNA that matched some of the DNA found at the crime scene), and assign the individual to a most likely population of origin (step g).

In addition to the suggestions above, Gallo teaches that you can determine the frequency of the suspect's profile against the relevant population databases (see entire article). For example, Gallo suggests that a suspect's DNA sample "can be compared to databases from populations that predominantly live in the area where the crime was committed" (pg. 9).

Gallo does not teach the method steps as specifically outlined in the claimed invention, however, given the teachings of Gallo, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have carried out the claimed methods in order to have achieved the benefit of a higher predictability of positively identifying the perpetrator of a crime.

6. Claims 1-11, 14-18, 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Triggs (Science and Justice (2000) 40(1): 33-38).

Assignment of an individual to a group or population of origin through the genotyping of said individual is a well-known technique that has been used for several years in the art. One of the many applications of genotyping and subsequent assignment of an individual to a particular group or population of origin is in the field of forensic science (pg. 34). Given the broadest reasonable interpretation of the claimed invention, forensic detection of criminal suspects reads on the claims as broadly written.

Specifically, when a crime occurs, law enforcement personnel obtain possible suspects. That is, they identify a set of candidate populations of origin, wherein each candidate population is characterized by genotype frequencies and allele frequencies at one or more marker loci (humans inherently have genotype frequencies and allele frequencies at one or more marker loci) (step (a)). Simultaneous to step (a) (i.e., identifying human beings), law enforcement personnel are also only selecting individuals who they believe may have committed the crime by using knowledge of the individual, such as, the whereabouts of the individuals at the time of the crime, or a description of the individual, such as, height, hair color, skin color, etc. (step (b)). Following step (b), law enforcement personnel will genotype the suspect (step c), as well as, DNA type the profiles of samples collected at the crime scene (pg. 34). Once the two samples are analyzed, law enforcement will determine whether a match between the suspect's DNA profile and that found at the crime scene (pg. 34) (steps d-g).

In other words, law enforcement determines a prior genotype probability by using knowledge about a subject (steps a-b), then genotypes the subject (step c), matches the genotype to samples taken at the crimes scene, giving a genotype probability (step d), and combining steps (b) and (d) to form a population posterior genotype probability (step e). Finally, law

enforcement personnel would identify a most likely individual to the population, based on the largest population posterior genotype (step f) (i.e., an individual who may fit the description of someone who was around the crime scene at the time of the crime, as well as, someone's DNA that matched some of the DNA found at the crime scene), and assign the individual to a most likely population of origin (step g).

In addition to the suggestions above, Triggs teaches methods for assigning individuals from a population in mixed race populations, and more specifically outlines several different case scenarios for assignment based on the steps outlined above (see entire article).

Triggs does not teach the method steps as specifically outlined in the claimed invention, however, given the teachings of Triggs, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have carried out the claimed methods in order to have achieved the benefit of a higher predictability of positively identifying the perpetrator of a crime.

7. Claims 1-12, 14-20, 22 rejected under 35 U.S.C. 103(a) as being unpatentable over Ron et al. (J of Dairy Science (1996) 79(4): 676-681).

Ron teaches the misidentification rate in Israeli dairy cattle population and its implications for genetic improvement. Specifically, Ron teaches that the misidentification (e.g., mistaken paternity or maternity) can be costly to the cattle industry (pgs. 676 and 679-680).

Ron teaches the DNA analysis of one hundred seventy-three cows, the progeny of 4 sires, which were sampled from 14 herds (steps a-b) (pg. 677). The cows were genotyped (step c) (pg. 677-78), and then compared to the assumed sire to determine a population genotype probability (step d) (pg. 678). The probabilities from step (b) and (d) were combined to determine the most

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likely population of origin of the cows (steps e-g) (pgs. 678-679). Ron teaches that by carrying out this assignment method, milk producers can save money (pg. 679-680).

Ron does not teach the method steps as specifically outlined in the claimed invention, however, given the teachings of Ron, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have carried out the claimed methods in order to have achieved the benefit of identifying mistaken paternity, in order to have achieved the benefit of reducing costs to milk producers.

### ***Conclusion***

8. Claims 13, 21 and 23 are allowable.
9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hoeschele et al. (Genetics (1997) 147(3): 1445-1457)

### ***Correspondence***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander H. Spiegler whose telephone number is (703) 305-0806. The examiner can normally be reached on Monday through Friday, 7:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on (703) 308-1119. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-4242 and (703) 305-3014. Applicant is also invited to contact the TC 1600 Customer Service Hotline at (703) 308-0198.

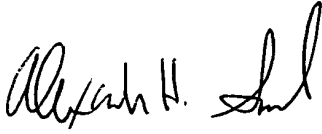


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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.



Alexander H. Spiegler  
January 27, 2003



KENNETH R. HORLICK, PH.D  
PRIMARY EXAMINER

1/27/03